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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,695	09/21/2001	David J. Lenz	IL-10785	5236

7590

02/02/2004

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EXAMINER
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BELL, BRUCE F

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/960,695

Applicant(s)

LENZ ET AL.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10,12-16,18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10 and 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 2, 4-8, 12-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a single plate construction having spaced members with defining contact pads, does not reasonably provide enablement for a single plate construction having three layers of different materials. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Applicant's instant invention does disclose a three layer construction wherein three different layered materials may be used, however, there is not any disclosure to having a plate with three different layered materials. In fact Figure 4B shows a plate construction having the spaced members but does not show any layers, but only a single plate. One having ordinary skill in the art would not have the ability to make a single plate having three different material layers to make the invention as instantly claimed.

3. Claims 1, 2, 4-8, 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 1, 2, 4-8, 12-15 are vague and indefinite with respect to how a single plate can be composed of three layers of different materials from the instant claims as set forth. Is the plate a composite plate, a plate that has been alloyed, a plate that is electroplated but having distinct layers? Applicant's have not disclosed if the single plate is made of multiple layers and fused or how they are construing the plate to be just one plate.

### ***Claim Objections***

4. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 4 is objected to as it appears to not further limit independent claim 1, since claim 1 discloses that the plate is made of three different layered materials, how can the three layers be of the same material or two layers of the same and one different. Further, how is the recitation of the three different material layers in claim 4 further limiting the recitation in claim 1 of the plate having three different material layers.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 9, 10, 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Katz et al (4983472).

Katz et al disclose a fuel cell having a current collector plate 22 located between an electrode 20 and a separator plate 25. The collector plate has a plurality of arches 26, 28 deformed from a single flat plate in a checker board pattern. The arches are of sufficient height 30 to provide a reactant flow area and are of sufficient stiffness to accept compressive load and resiliency to distribute the load and maintain electrical contact. See abstract. The current collector should have enough flexibility to maintain contact over temperature transients and flexibility to accept manufacturing tolerances. See col. 2, lines 15-20. A planar surface of the collector plate 22 abuts the electrode 20 and a plurality of arches 26, 28 deformed from the plate, abut a separator plate 25, wherein when under compression the arches resist the load and maintain electrical contact and provide a reactant flow path. Each arch 26, 28 in the collector plate has legs at an obtuse angle with respect to the planar plate and a slightly arcuate beam substantially parallel to the plate. See col. 2, lines 26-35.

The prior art of Katz et al anticipates the applicant's instant invention as set forth above with respect to the instant claims as set forth. The Katz et al invention is stated as being a current collector instead of an interconnector. However, one having ordinary skill in the art knows that an interconnector connects one cell to another in a fuel cell stack. The current collector of Katz et al is shown to perform that function and does have the spaced members as set forth in the applicant's

instant claims and does have a plurality of sections and angles as shown by the arches 26, 28 and further Katz et al disclose that a part of the arches 26, 28 are parallel to the plate. The spaced apart members or arches 26, 28 appear to represent a bridge configuration and therefore, the instant claims as set forth by the applicant are anticipated by the prior art of Katz et al.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katz et al (4983472).

Katz et al is as disclosed above in the 35 USC 102 rejection.

Katz et al does not disclose that the spaced apart members have a width greater than a length thereof.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Katz et al does not disclose the specific configuration of the spaced members on the plate, it is known in the art to be able to modify the construction of an apparatus for the purpose of meeting specific needs, such as the geometry of the device, in order that the fuel cell device be able to fit into a specific place in an apparatus that it is going to power. The configuration of an interconnector can

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also further enhance the amount of reactants being utilized in the fuel cell system and therefore would be within the ability of the skilled artisan.

***Allowable Subject Matter***

9. Claims 18 and 19 are allowable over the prior art of record.
10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach and/or suggest a fuel cell stack having a plurality of interconnects having spaced protruding members with a configuration that has a tapering section and a flat section, which configuration contacts opposite surfaces of adjacent single cells.

***Response to Arguments***

11. Applicant's arguments with respect to claims 1, 2, 4-10, 12-16 have been considered but are moot in view of the new ground(s) of rejection.

The examiner in charge of this application would like to apologize for the indication of allowable subject matter made in the previous office action. In view of the findings in the information disclosure statement submitted on October 17, 2003, the examiner has made a new grounds of rejection based on Katz et al (4983472) supplied by the applicant's. The examiner has also made a 35 USC 112 rejection based on the instant claim 1 in which the previous examiner had stated that the claim would be allowable if the limitation that the plate be composed of three layers of different materials was inserted. It appears to the examiner now handling this application that the use of three different layers of materials in the three plate construction would be allowable, however

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in a one plate construction, it is not clear as to how this can be as the instant specification does not indicate how this could be accomplished. Further with respect to the configuration as set forth in instant claim 9, it appears that the contact pads according to the claims can be placed on either side of the plate surface and therefore, the prior art device showing the contacts on the side adjacent to the separator meet the applicant's instant claims, since there is no disclosure in the instant claim to these contacts being on the sides adjacent to the anode of one cell and the cathode of another cell. Further, even if applicant's include this limitation into the instant claims, it appears that it would be obvious to modify the plate to contact the separator between each cell to make the electrical contact since the cells are in series. Whether the electrical contact is made to the separator or to one of the electrodes of each cell, the plurality of cells in combination will still work the same and the modification would be within the ability of the skilled artisan.

Since, applicant's had been given allowable subject matter in the previous office action, the examiner in charge of this application has made this office action non-final and again apologize for any inconvenience made to the applicant's.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571 272-1302. The fax phone




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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BFB  
January 30, 2004

  
Bruce F. Bell  
Primary Examiner  
Art Unit 1746